

REMARKS

Re-examination and reconsideration of the subject matter identified in caption, pursuant to and consistent with 37 C.F.R. §1.116, and in light of the remarks which follow, are respectfully requested

Claims 9, 12, 13, 15 and 24 have been currently amended in response to §112 issues raised in the Office Action. Claims 1-20 and 24 remain pending in this application.

Claims 9, 12, 13, 15 and 24 were rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth in paragraph (2) of the Final Rejection. Withdrawal of this rejection is respectfully requested in view of the above amendments and the following reasons.

Claims 9 and 12 have been amended in the manner suggested by the Examiner. Claim 13 has been amended to correct a typographical error in step (b) and to change the language "a halide of rare earth metal" to read --a metal halide--. Claim 15 has been amended to delete the period in line 1. Claim 24 has been amended to clarify that substituent "X" refers to the formula in claim 3.

In view of the above, the §112 rejection has been obviated and should be withdrawn. Such action is earnestly requested.

Claims 1-20 and 24 stand finally rejected under 35 U.S.C. §103(a) as unpatentable over the article by Hu et al. appearing in the Chinese Science Bulletin (Vol. 37, pp. 566-570, April 1992) in view of WO 92/17510 (Jones et al.) for reasons provided in paragraph (5) of the Office Action. Reconsideration and withdrawal of this rejection are respectfully requested for at least the reasons which follow.

In essence, it is the Applicants' position that those of ordinary skill in the art would not seek to enhance the activity of conjugated diene catalysts by looking in the direction of 1-monoolefin catalysis. Catalytic activity is notoriously unpredictable and those of ordinary skill in the art could not reasonably predict that the catalyst supports described in Jones et al. '510 for 1-monoolefin polymerization could be used in combination with the isoprene catalysts of Hu et al.

There is no disclosure or suggestion in Hu et al. that the catalytic complexes disclosed therein could be disposed on supports of any kind, let alone inorganic oxides. Although Jones et al. '510 does mention the possible use of dienes as comonomers (page 7, line 9), the 28 specific polymerization examples disclosed therein involve the homopolymerization of ethylene or propylene. Thus, when one reviews the entire disclosure of Jones et al. '510 as a whole, one must conclude that the teachings thereof are restricted to the polymerization of 1-monoolefins.

To further emphasize the unpredictable nature of determining the viability of transferring catalytic activity from one system to another, it should be noted from Table I of Hu et al. that one neodymium complex showed relatively high catalytic activity for isoprene polymerization while a similar neodymium complex showed no catalytic activity for isoprene. A review of the data in Table 2 of Hu et al. shows that neodymium complexes containing certain aluminum alkyls, i.e., $Al(i-Bu)_3$ and $Al(i-Bu)_2H$ exhibit catalytic activity while other Al trialkyls such as triethyl aluminum show no activity. It should be pointed out that the presently claimed catalysts which contain triethyl aluminum do exhibit catalytic activity for conjugated diene polymerization.

It is clear from the above arguments that those of ordinary skill would not have been motivated to use the inorganic oxides disclosed in Jones et al. '510 as supports for the catalytic complexes described in Hu et al. Due to the recognized difficulty in predicting catalytic activity, there would be no reasonable expectation that catalysts obtained by combining the teachings of the cited art would successfully polymerize conjugated diolefins. It is the present inventors who unexpectedly discovered that complexes of the type disclosed in Hu et al. when disposed on inorganic oxide supports, could be used to obtain conjugated diolefin polymers possessing significantly higher viscosities and contents of cis-1,4 linkages.

Moreover, claims 7, 8, 12, 13 and 17-20 are directed to catalysts and processes of preparing catalysts wherein the inorganic oxide supports are reacted with a Lewis acid of the formula $M'X_n$ either alone or in the presence of a metal halide of the formula MX_3 . There is no disclosure in Jones et al. '510 whereby the inorganic oxide supports are reacted in the manner set forth in claims 7, 8, 12, 13 and 17-20. Clearly, these claims are unobvious over the combined teachings of the cited references.

For at least the aforementioned reasons, the §103(a) rejection over Hu et al. in view of WO '510 should be withdrawn. Such action is earnestly solicited.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at (703) 838-6683 at her earliest convenience.

Respectfully submitted,

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